2:15

753-2 Biplane and Multiplane Transesophageal Echocardiography in Suspected Acute Aortic Dissection

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Between 1991–1994, 130 pts. (95 men, age 17–88 yrs.) were evaluated by bi or multiplane transesophageal echocardiography (*TEE*) because of suspected acute aortic dissection (*AD*) (112 pts) or acute extension of chronic dissection (*CD*) (18 pts). TEE results were compared to diagnoses obtained by surgery/necropsy (55%) or by at least one additional imaging method.

Results — The accuracy of TEE in AD: AD was present in 49 (type A in 30, Type B in 19) of the 112 pts. (44%) and 8 of them had intramural hematoma (*IMH*). TEE found AD in 48/49 pts. with, and excluded AD in 78/81 without, that diagnosis. The 1 pt. with false negative TEE had a 1.5 cm thrombosed false lumen in the ascending aorta (Asc Ao). Two pts. with Type A AD (1 with IMH and 1 with thrombosed false lumen in the Asc Ao) were classified as type B AD. The 3 false positive diagnoses were in 2 pts. with large aneurysms of the Asc Ao and in 1 in the Desc Ao. The accuracy of TEE for AD was:

	AD	Type A AD	Type B AD	IMH
Sensitivity (%)	98	90	100	89
Specificity (%)	96	97	99	98

Microscopic evaluation of surgical specimens in 6 with IMH of Asc Ao showed similar findings to classical AD. Complications of AD, CD and enlarging aneurysms were evaluated in the 130 pts. TEE showed 100% accuracy for aortic regurgitation and pericardial ruptures. The sensitivities were 75%, 85% and 11%, respectively for TEE for pseudoaneurysms (12 pts), hemothorax (20 pts) and hemomediastinum (9 pts), with the specificity for all 100%.

Conclusions Bi and multiplane TEE accurately detected AD and its major complications, but thrombosed false lumen, intramural hematomas and pseudoaneurysms need special attention. TEE was inaccurate in identifying mediastinal leaks and ruptures.

2:30

753-3 Transesophageal Echocardiographic Findings of Non-traumatic Thoracic Aortic Rupture with or without Associated Dissection

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Thoracic aortic rupture in the absence of trauma is a rare but life-threatening condition which requires prompt and accurate diagnosis. Transesophageal echocardiography (TEE) has become the diagnostic tool of choice in aortic dissection, but its role in the detection of aortic rupture has not been well defined. To assess the TEE features of non-traumatic aortic rupture we reviewed 3800 consecutive TEE studies to identify patients diagnosed by TEE to have aortic rupture and with convincing clinical findings such as early deaths or surgical confirmation. Ten patients were identified (5 men and 5 women, age 70.3 ± 5.9 years). All presented with chest pain, and 7 had hypotension. One patient ruptured into the pericardium and 9 into the mediastinum. Associated aortic dissection (3 type A and 3 type B) was present in 6. Urgent surgery was performed in 5, 2 of whom survived. All 5 non-surgical patients died, and autopsy was performed in 3 with confirmation of the diagnosis. TEE findings were as follows: indistinct aortic wall in 10, extrinsic periaortic mass in 10, dilated descending aorta in 10, aortic aneurysm in 6, and dissection flap in 6. The rupture site was thrombosed in 7, while in the remaining 3 patients free flowing blood into the mediastinum was detected.

Conclusion: Non-traumatic aortic rupture can occur with or without dissection. The findings on TEE of an indistinct aortic wall and periaortic hematoma in an enlarged aorta strongly suggest rupture. Early diagnosis by TEE leading to corrective surgery may result in a more favourable outcome.

2:45

753-4 Transesophageal Echocardiography in Patients with Blunt Chest Trauma

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Rupture of the aorta resulting from blunt chest trauma (BCT) is often fatal. Early diagnosis and surgical treatment improves the chances of survival. Transesophageal echocardiography (TEE) permits accurate and rapid visualization of the thoracic aorta and is ideal in evaluating such patients. We performed TEE as the initial diagnostic procedure in 141 patients (pts) with BCT. 90% had a widened mediastinum on chest x-ray (CXR) as an indication of possible aortic damage. 92% of studies were performed in the emergency room. Sixty pts were on mechanical ventilatory support. Passage of the scope was difficult in 2 pts. Nine developed transient hypoxemia, one requiring mechanical ventilation.

Findings: 116 pts (82%) had no evidence of aortic trauma on TEE. Aortic disruption was noted in 6 pts (4%), 5 of whom underwent surgery and survived. In 15 pts the findings were indeterminate. Aortogram in these pts were negative for trauma. Disruption involving the distal arch was missed in 2 pts. Both died.

Conclusions: (1) TEE may be safely and rapidly performed in pts with BCT despite a high proportion being critically ill. (2) A low yield of aortic disruption is obtained when the pre-test probability is low. (3) Early identification of aortic disruption by TEE and prompt surgical management improves survival. (4) Correct identification of disruption may be difficult in some cases where there is inadequate visualization of the aorta. (5) The diagnostic accuracy in identifying aortic disruption may be improved by the newer multiplanar TEE imaging modalities and by increasing operator experience with TEE in BCT pts, making this the procedure of choice in cases of suspected aortic disruption.

3:00

753-5 Role of Transesophageal Echocardiography in the Diagnosis and Management of Traumatic Rupture of the Aortic Isthmus

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A comprehensive description of transesophageal echocardiographic (TEE) findings associated with traumatic aortic rupture (TAR) is still lacking. To correlate TEE and anatomic findings, a prospective study was conducted in 29 consecutive patients suffering from blunt chest trauma and suspected TAR. Confirmation of the diagnosis of TAR was obtained by either aortography, surgery, or necropsy in all patients. TEE studies were performed during the first day of admission using a monoplane probe. TEE studies and aortograms were reviewed by independent experienced observers. The diagnosis of subadventitial TAR was made in 9 patients and intimal tears in 2 patients (one confirmed and one missed by aortography). Subadventitial TAR appeared as an abnormal thick structure composed of intima and media, and mobile within the isthmus lumen. Color flow mapping revealed no differences in blood flow velocity on both sides of the disrupted aortic wall with turbulent flow surrounding the traumatic tear. Symmetric or asymmetric localized aortic enlargement reflecting the adventitia under tension was also noted. This type of lesion requires prompt surgical repair. In contrast, intimal aortic tears appeared as very mobile thin appendages of the aortic wall. Color flow mapping demonstrated a localized mosaic of colors reflecting blood flow turbulence around the intimal laceration. Aortic diameter remained unchanged, since the tear was too small and superficial to induce adventitial distention. Since these lesions appear to regress spontaneously, conservative management and TEE follow-up was undertaken. TEE failed to diagnose a two-millimeter long medial aortic rupture with integrity of the adventitia (demonstrated at necropsy). Aortography must be obtained when the TEE study is equivocal or when a laceration of the aortic arch and the brachiocephalic arteries is suspected.

Conclusions: In this study, transesophageal echocardiographic and anatomic findings in patients with traumatic aortic rupture were strongly correlated. In experienced hands, TEE can be considered as an accurate firstline imaging technique for the diagnosis and management of traumatic aortic rupture.

3:15

753-6 Thoracic Aorta Atherosclerosis in Patients with Heterozygous Familial Hypercholesterolemia. A Transesophageal Echocardiographic Study

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Heterozygous familial hypercholesterolemia (HFH) is strongly associated with premature atherosclerosis. To assess the degree of thoracic aorta atherosclerosis (TAA) in patients with HFH with no evident coronary heart disease, 34 patients (age 41 ± 10 years) were studied by transesophageal echocardiography (TEE) and compared to 34 age and sex matched controls. All patients had negative coronary heart disease history and negative stress test.

TEE detection of normal or mild intimal irregularity were Grade I; increased echo density of the intima with well-defined atheroma extending <3 mm in the aortic lumen were Grade II, atheroma >3 mm were Grade III and protruding mobile or pendunculated plaques were Grade IV. Grades II–IV were considered as TAA. TEE detected atherosclerotic plaques in 13/34 (38.2%)